Space Weather Forecast

Issued on Saturday, 28 October 2023 at 01:14 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: Fast solar wind influence Days 2-3 (29-30 Oct) with Minor to Moderate Geomagnetic Storms expected.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Has been Low. Activity started the 24 hour period at a a high Common class level, on the tail of the Moderate flare that occurred late on the 26th. After x-ray activity had returned to background levels isolated Common class flares occurred, the largest of which was from close to AR3473.

There are currently 4 numbered regions on the visible disc, and one new unnumbered region, all of which are small and simple. One previously unnumbered region has faded, and AR3468 is now barely visible. Most regions are showing signs of gradual decay.

No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind started at slightly elevated levels around 480 km/s, with a brief peak to 500 km/s at 27/0040 UTC, and then gradually declined to end the period at background levels of 360 km/s. The strength of the solar wind's magnetic field was initially at moderate levels, but decreased to become weak from 27/1000 UTC. The north-south component, Bz, has been mostly orientated southward and has fluctuated between weak and moderate levels. Geomagnetic activity was Unsettled to Active at first, then declined to Quiet levels during the second half of the day.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Very Low or Low activity is expected, with isolated Common Class flares. There is a slight chance of isolated M-flares, mainly from AR3473 but also potentially from the arrival or return of sunspot regions to the visible disc.

Solar Wind / Geomagnetic Activity: The next solar wind enhancement is expected to arrive either late tomorrow or more likely early Day 3 (30 Oct) from large coronal hole features. The solar wind speed is expected to become elevated, or possibly strong. Predominantly Quiet geomagnetic activity is expected until the arrival of the high speed stream (HSS). Then Minor to Moderate Geomagnetic Storms are likely Days 2-3. Activity is then expected to decline during day 4 (31st) as the influence of the HSS wanes.

Enhanced solar winds are expected to lead to potential aurora across Scotland and Northern Ireland under clear skies during days 2-3 (29th and 30th).

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	40	80	50
Strong	G3	No	1	5	10	5
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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